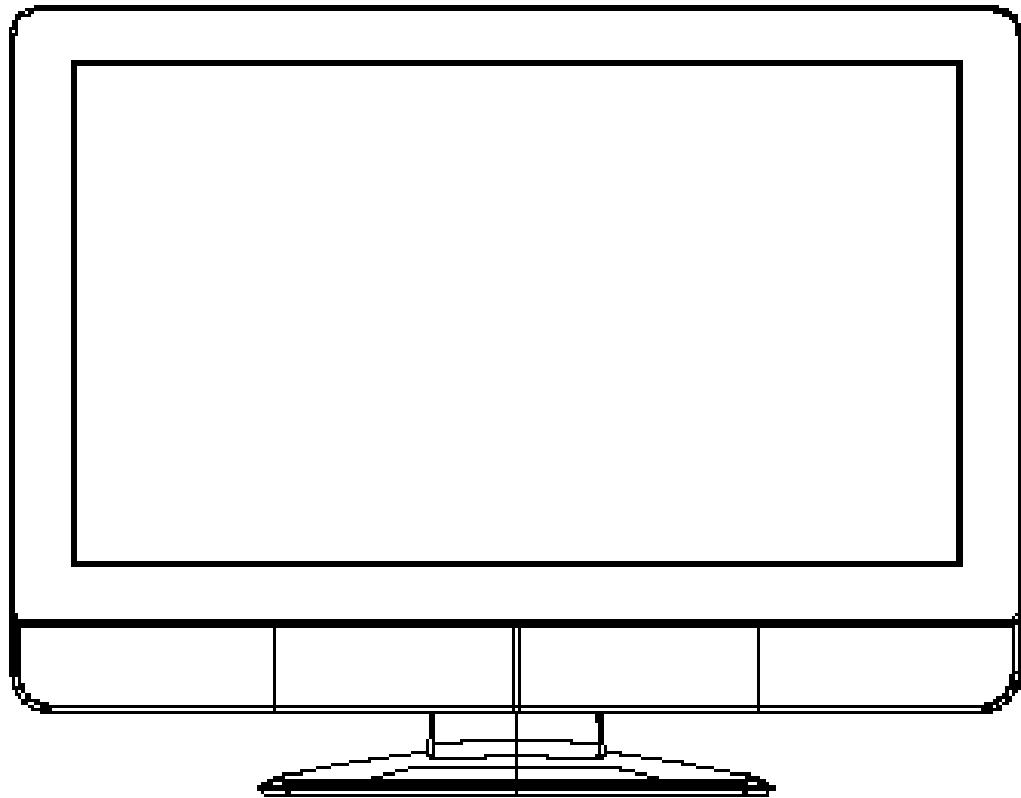


Service Manual



**Model #: VL420M_LGD_
LC420WUH-SBR1-7R1
(T42USVZB1RE4.VL420M1)**

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Appendix

1. Main Board Circuit Diagram
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3. Assembly Explosion Drawing

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FCC INFORMATION

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause unacceptable interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures -- reorient or relocate the receiving antenna; increase the separation between equipment and receiver; or connect the into an outlet on a circuit different from that to which the receiver is connected.

FCC WARNING

To assure continued FCC compliance, the user must use a grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. Also, any unauthorized changes or modifications to Amtrak products will void the user's authority to operate this device. Thus VINC Will not be held responsible for the product and its safety.

CE CERTIFICATION

This device complies with the requirements of the EEC directive 89/336/EEC with regard to "Electromagnetic compatibility."

SAFETY CAUTION

Use a power cable that is properly grounded. Always use the AC cords as follows – USA (UL); Canada (CSA); Germany (VDE); Switzerland (SEV); Britain (BASEC/BS); Japan (Electric Appliance Control Act); or an AC cord that meets the local safety standards.

Chapter 1 Features

1. Built in TV channel selector for TV viewing.
2. Simulatnueous display of PC and TV images.
3. Connectable to PC's analog RGB port.
4. Built in HDTV, S-video, composite video, HDMI, ATV and DTV, Audio line out, Audio optical out.
5. Built in auto adjust function for automatic adjument of screen display.
6. High quality 1920X1080 pixel by pixel display.
7. Smoothing function enables display of smooth texts and graphics even if image with resolution lower than 1920X1080 is magnified.
8. Advanced video functions for personal favor.
9. Picture In Picture (PIP) function to show TV or VCR images.
10. Power saving to reduce consumption power too less than **0.5W**.
11. On Screen Display: user can define display mode
(i.e. color, brightness, contrast, sharpness, backlight),sound setting, PIP, TV channel program, aspect and gamma or reset all setting.

Chapter 2 Specification

1. TFT-LCD CHARACTERISTICS

Model Name: **LPL LC420WUH-SBA1** (Vendor: LG. Philips LCD Co., Ltd)

Item	Specification
Active Screen Size	42.02 inch (1067.31mm) diagonal
Outline Dimension	983.0(H) x 576.0(V) x 46.0mm(D)(Typ.)
Pixel Pitch	0.4845 mm x 0.4845 mm
Pixel Format	1920 horiz. by 1080 vert. Pixels, RGB stripe arrangement
Color Depth	10-bit, 1.06 B colors
Luminance, White	500 cd/m ² (Center 1point ,Typ.)
Viewing Angle (CR>10)	Viewing angle free (R/L 178 (Min.), U/D 178 (Min.))
Power Consumption	Total 166.8 W (Typ.) (Logic=6.8 W, Back Light=160W with Inverter ,Control PCB)
Weight	11.0Kg (Typ.)
Display Mode	Transmissive mode, Normally black
Surface Treatment	Hard coating(3H), Anti-glare treatment of the front polarizer (Haze 10%)

2. Input Connectors

- 1x Co-axial RF (ATSC/QAM/NTSC)
- 4x HDMI™** with HDCP (1 with Stereo Audio RCA)
- 2x Component YPbPr plus Stereo Audio
- 1x RGB PC plus Stereo Audio
- 1x S-Video plus Stereo Audio (shared with AV1)
- 2x Composite Video (AV1 & AV2)
- Service port , Multi Media (USB).

3. Output Connectors

- SPDIF Out (Optical Audio) , RCA (Audio OUT)

4. POWER SUPPLY

Input Voltage Level: 100~240 Vac, 50/ 60 Hz

Power Consumption: **230W MAX**

Power OFF: to less than **0.5W MAX** (at 120 Vac)

5. Speaker

Built in Speakers: 6Ω/10W (max) X 2 way.

6. ENVIRONMENT

Operating Temperature: 5c~35c (Ambient)

Operating Humidity: Ta= 35 °C, 90%RH(Non-condensing)

Operating Altitude: 0 - 14,000 ft

Non-Operating : 4000 ft

7. DIMENSIONS (Physical dimension)

(Unit: mm)

	With Stand	Without stand
a. Height	688.9	650.9
b. Width	1000.9	1000.9
c. Depth	241.4	96.4

8. WEIGHT (Physical weight)

Net : 17.44 +/- 1.0 kg

Gross : 23.47 +/- 1.0 kg

9. Precautions

Please pay attention to the followings when you use this TFT LCD module.

9-1. Mounting Precautions

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.

- (3) Please attach the surface transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to resist external force.
- (4) You should adopt radiation structure to satisfy the temperature specification.
- (5) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter causes circuit break by electro-chemical reaction.
- (6) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of polarizer for bare hand or greasy cloth.(Some cosmetics are detrimental to the polarizer.)
- (7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with petroleum benzine. Normal-hexane is recommended for cleaning the adhesives used to attach front / rear polarizers. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.
- (8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (9) Do not open the case because inside circuits do not have sufficient strength.

9-2. Operating Precautions

- (1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage:
$$V = \pm 200 \text{mV} \text{(Over and under shoot voltage)}$$
- (2) Response time depends on the temperature.(In lower temperature, it becomes longer.)
- (3) Brightness depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time(required time that brightness is stable after turned on) becomes longer.

- (4) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (5) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (6) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- (7) Please do not give any mechanical and/or acoustical impact to LCM. Otherwise, LCM can't be operated its full characteristics perfectly.
- (8) A screw which is fastened up the steels should be a machine screw. (if not, it causes metallic foreign material and deal LCM a fatal blow)
- (9) Please do not set LCD on its edge.

9-3. Electrostatic Discharge Control

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don't touch interface pin directly.

9-4. Precautions for Strong Light Exposure

Strong light exposure causes degradation of polarizer and color filter.

9-5. Storage

When storing modules as spares for a long time, the following precautions are necessary.

- (1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 35°C at normal humidity.
- (2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

9-6. Handling Precautions for Protection Film

- (1) The protection film is attached to the bezel with a small masking tape.
When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion- blown equipment or in such a condition, etc.
- (2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the bezel after the protection film is peeled off.
- (3) You can remove the glue easily. When the glue remains on the bezel surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.

Chapter 3 On Screen Display

On Screen Display (OSD) is a friendly interface providing the function adjusting in our system. Customers could operate it only by few buttons. There is the introduction of the OSD.

Main unit button

Power

MENU

CH ▲

CH ▼

VOL +

VOL -

Input

On Screen Display

TV Source

A. PICTURE :

Picture Mode(Custom, Standard, Movie, Game, Vivid, Football, Golf, Basketball, Baseball)

- a. Backlight(0~100)
- b. Brightness(0~100)
- c. Contrast(0~100)
- d. Color(0~100)
- e. Tint(-32~+32)
- f. Sharpness(0~7)
- g. Advanced Video
 - g-1. Noise Reduction(Off, Low, Medium, Strong)
 - g-2. Color Enhancement(Off, Normal, Rich Color, Green/Flesh, Green/Blue)
 - g-3. Advanced Adaptive Luma(Off, Low, Medium, Strong, Extend)
 - g-4. Backlight Control (Off, DCR, OPC)
 - g-5. Color Temperature (Custom, Cool, Computer/Normal)
 - g-6. Smooth Motion
 - g-7. Film Mode (Auto/Off)
 - g-8. Reset Picture Mode

B. AUDIO :

Audio Mode(Flat, Rock, Pop, Classic, Jazz)

- a. Equalizer
 - a-1 120Hz
 - a-2 500Hz
 - a-3 1.5 KHz
 - a-4 5 KHz
 - a-5 10KHz
- b. Balance(-50~+50)
- c. SRS TSHD (On/Off)
- d. SRS TruVolume (On/Off)
- e. Digital Audio Out(PCM, Off, Dolby Digital)
- f. Speakers(On/Off)
- g. Analog Audio Out(Fixed, Variable)
- h. Lip Sync(0~5)
- i. Reset Audio Mod

C. TV :

- a. Tuner Mode(Cable, Antenna)
- b. Auto Search
- c. Partial Channel Search
- d. Scan Mode (Analog, Digital, Analog/ Digital)
- e. From Channel (1~135 or 2~69)
- f. To Channel (1~135 or 2~69)
- g. Skip Channel
- h. MTS(ATV : Mono/Stereo/Sap : DTV : Language1/Language2/Language3)
- i. Time Zone(Atlantic, Eastern, Indiana, Central, Mountain, Arizona, Newfoundland, Pacific, Alaska, Hawaii)
- j. Daylight Saving(On, Off)
- k. Channel Info
 - k-1. Physical CH
 - k-2. Frequency:
 - k-3. Modulation:
 - k-4. Status:
 - k-5. SNR(dB):
 - k-6. Signal Strength:

D. SETUP :

- a. Language(English, Espanol, Francais)
- b. PIP
 - b-1: PIP Mode (Off, PIP, POP)
 - b-2: PIP Source(TV,...)
 - b-3: PIP Position(TL,..., BR)
 - b-4: Size(Small, Medium, Large)
 - b-5: Audio Source (Main or PIP)
- c. Sleep Timer(Off, 30Minutes, 60Minutes, 90Minutes, 120Minutes)
- d. Wide (Zoom1,Zoom2, Full, Stretch, Normal, Panoramic)
- e. Input Naming
- f. CC
 - f-1. CC (Off, CC1, CC2, CC3, CC4, Service1, Service2 Service3, Service4, Service5, Service6)
 - f-2. Digital CC Style
- g. H/V Position
 - g-1. H-Position (0~64) (ATV support only)
 - g-2. V-Position (0~32) (ATV support only)
 - g-3. H-Size(0~100) (ATV support only)
 - g-4. V-Size(0~100) (ATV support only)
- h. Parental
 - h-1. Rating Enable (on/off)
 - h-2. Channel Block
 - h-3. US TV Rating
 - h-4. US Movie Rating
 - h-5. Canadian English Rating
 - h-6. Canadian French Rating
 - h-7. DTV Rating
 - h-8. Block Unrated TV (Yes/ No)
 - h-9. Access Code Edit

- i. System Info
 - i-1. Model Name:
 - i-2. Version
 - i-3. Revision
 - i-4. Source Type
 - i-5. Resolution
 - i-6. V.Freq
 - i-7. Progressive
- j. System Reset
 - j-1. Setup Wizard
 - j-2. Reset All Setting

RGB Mode

A. PICTURE :

- a. Auto Adjust
- b. Backlight(0~100)
- c. Brightness(0~100)
- d. Contrast(0~100)
- e. Color Temperature
- f. H-Size(0~255)
- g. H-Position(0~100)
- h. V-Position(0~100)
- i. Fine Tune(0~31)

B. AUDIO :

Audio Mode(Flat, Rock, Pop, Classic, Jazz)

a. Equalizer

- a-1 120Hz
- a-2 500Hz
- a-3 1.5 KHz
- a-4 5 KHz
- a-5 10KHz

- b. Balance(-50~+50)
- c. SRS TSHD (On/Off)
- d. SRS TruVolume (On/Off)
- e. Digital Audio Out(PCM, Off, Dolby Digital)
- f. Speakers(On/Off)
- g. Analog Audio Out(Fixed, Variable)
- h. Lip Sync(0~5)
- i. Reset Audio Mode

C. SETUP :

- a. Language(English, Espanol, Francais)
- b. PIP
 - b-1. PIP Mode (Off, PIP, POP)
 - b-2. PIP Source(TV,...)
 - b-3. PIP Position(TL,..., BR)
 - b-4..Size(Small, Medium, Large)
 - b-5. Audio Source (Main or PIP)
- c. Sleep Timer(Off, 30Minutes, 60Minutes, 90Minutes, 120Minutes)
- d. Wide (Zoom1, Zoom2, Full, Stretch, Normal, Panoramic)
- e. Input Naming
- f. System Info
 - f-1. Model Name:
 - f-2. Version
 - f-3. Revision
 - f-4. Source Type
 - f-5. Resolution
 - f-6. V.Freq
 - f-7. Progressive
- g. System Reset
 - g-1. Setup Wizard
 - g-2. Reset All Setting

HDMI MODE

A. PICTURE :

Picture Mode(Custom, Standard, Movie, Game, Vivid, Football, Golf, Basketball, Baseball)

- a. Backlight(0~100)
- b. Brightness(0~100)
- c. Contrast(0~100)
- d. Color(0~100)
- e. Tint(-32~+32)
- f. Sharpness(0~7)
- g. Advanced Video
 - g-1. Noise Reduction(Off, Low, Medium, Strong)
 - g-2. Color Enhancement(Off, Normal, Rich Color, Green/Flesh, Green/Blue)
 - g-3. Advanced Adaptive Luma(Off, Low, Medium, Strong, Extend)
 - g-4. Backlight Control (Off, DCR, OPC)
 - g-5. Color Temperature
 - g-6. Smooth Motion
 - g-7. Film Mode (Auto/Off)
 - g-8. Reset Picture Mode

B. AUDIO :

- a. Audio Mode(Flat, Rock, Pop, Classic, Jazz)
- b. Equalizer
 - b-1 120Hz
 - b-2 500Hz
 - b-3 1.5 KHz
 - b-4 5 KHz
 - b-5 10KHz
- c. Balance(-50~+50)
- d. SRS TSHD (On/Off)
- e. SRS TruVolume (On/Off)
- f. Digital Audio Out(PCM, Off, Dolby Digital)
- g. Speakers(On/Off)
- h. Analog Audio Out(Fixed, Variable)
- i. Lip Sync(0~5)
- j. Reset Audio Mode

C. SETUP :

- a. Language(English ,Espanol, Francais)
- b. PIP
 - b-1.PIP Mode (Off, PIP, POP)
 - b-2.PIP Source(TV,...)
 - b-3.PIP Position(TL,..., BR)
 - b-4.Size(Small, Medium, Large)
 - b-5.Audio Source (Main or PIP)
- c. Sleep Timer(Off, 30Minutes, 60Minutes, 90Minutes, 120Minutes)
- d. Wide (Zoom1, Zoom2, Full, Stretch, Normal, Panoramic)
- e. Input Naming
- f. H/V Position
 - f-1.H-Position(0~64)
 - f-2.V-Position(0~32)
 - f-3.H-size(0~100)
 - f-4.V-size(0~100)
- g. System Info
 - g-1. Model Name:
 - g-2. Version
 - g-3. Revision
 - g-4. Source Type
 - g-5. Resolution
 - g-6. V. Freq(HZ)
 - g-7. Progressive
- h. System Reset
 - h-1. Setup Wizard
 - h-2. Reset All Setting

Video Sources :

AV1、AV2、COMPONENT1、COMPONENT2

A. PICTURE :

- a. Picture Mode(Custom, Standard, Movie, Game, Vivid, Football, Golf, Basketball, Baseball)
- b. Backlight(0~100)
- c. Brightness(0~100)

- d. Contrast(0~100)
- e. Color(0~100)
- f. Tint(-32~+32)
- g. Sharpness(0~7)
- h. Advanced Video
 - h-1. Noise Reduction(Off, Low, Medium, Strong)
 - h-2. Color Enhancement(Off, Normal, Rich Color, Green/Flesh, Green/Blue)
 - h-3. Advanced Adaptive Luma(Off, Low, Medium, Strong, Extend)
 - h-4. Backlight Control (Off, DCR, OPC)
 - h-5. Color Temperature
 - h-6. Smooth Motion
 - h-7. Film Mode (Auto/Off)
 - h-8. Reset Picture Mode

B. AUDIO :

- a. Audio Mode(Flat, Rock, Pop, Classic, Jazz)
- b. Equalizer
 - b-1 120Hz
 - b-2 500Hz
 - b-3 1.5 KHz
 - b-4 5 KHz
 - b-5 10KHz
- c. Balance(-50~+50)
- d. SRS TSHD (On/Off)
- e. SRS TruVolume (On/Off)
- f. Digital Audio Out(PCM, Off, Dolby Digital)
- g. Speakers(On/Off)
- h. Analog Audio Out(Fixed, Variable)
- i. Lip Sync(0~5)
- j. Reset Audio Mode

C. SETUP :

- a. Language(English,Espanol, Francais)
- b. PIP
 - b-1.PIP Mode (Off, PIP, POP)
 - b-2.PIP Source(TV,...)
 - b-3.PIP Position(TL,..., BR)
 - b-4.Size(Small, Medium, Large)
 - b-5.Audio Source (Main or PIP)
- c. Sleep Timer(Off, 30Minutes, 60Minutes, 90Minutes, 120Minutes)
- d. Wide (Zoom1, Zoom2, Full, Stretch, Normal, Panoramic)
- e. Input Naming
- f. H/V Position
 - f-1.H-Position(0~64)
 - f-2.V-Position(0~32)
 - f-3.H-size(0~100)
 - f-4.V-size(0~100)
- g. Parental
 - g-1.Rating Enable(On/Off)
 - g-2.Channel Block
 - g-3.US TV Rating
 - g-4.US Movie Rating
 - g-5. Canadian English Rating
 - g-6. Canadian French Rating
 - g-7. DTV Rating
- h. System Info
 - h-1. Model Name:
 - h-2. Version
 - h-3. Revision
 - h-4. Source Type
 - h-5. Resolution
 - h-6. V.Freq
 - h-7. Progressive

- i. System Reset
 - i-1. Setup Wizard
 - i-2. Reset All Setting

Multi-Media :

Picture Mode

- a. Slideshow Mode
- b. Slideshow With Music
- c. Music File Browser
- d. Audio Mode
- e. Repeat
- f. Sort By
- g. Duration
- h. Slideshow Effect
- i. Thumbnail Size
- j. Info

Music Mode

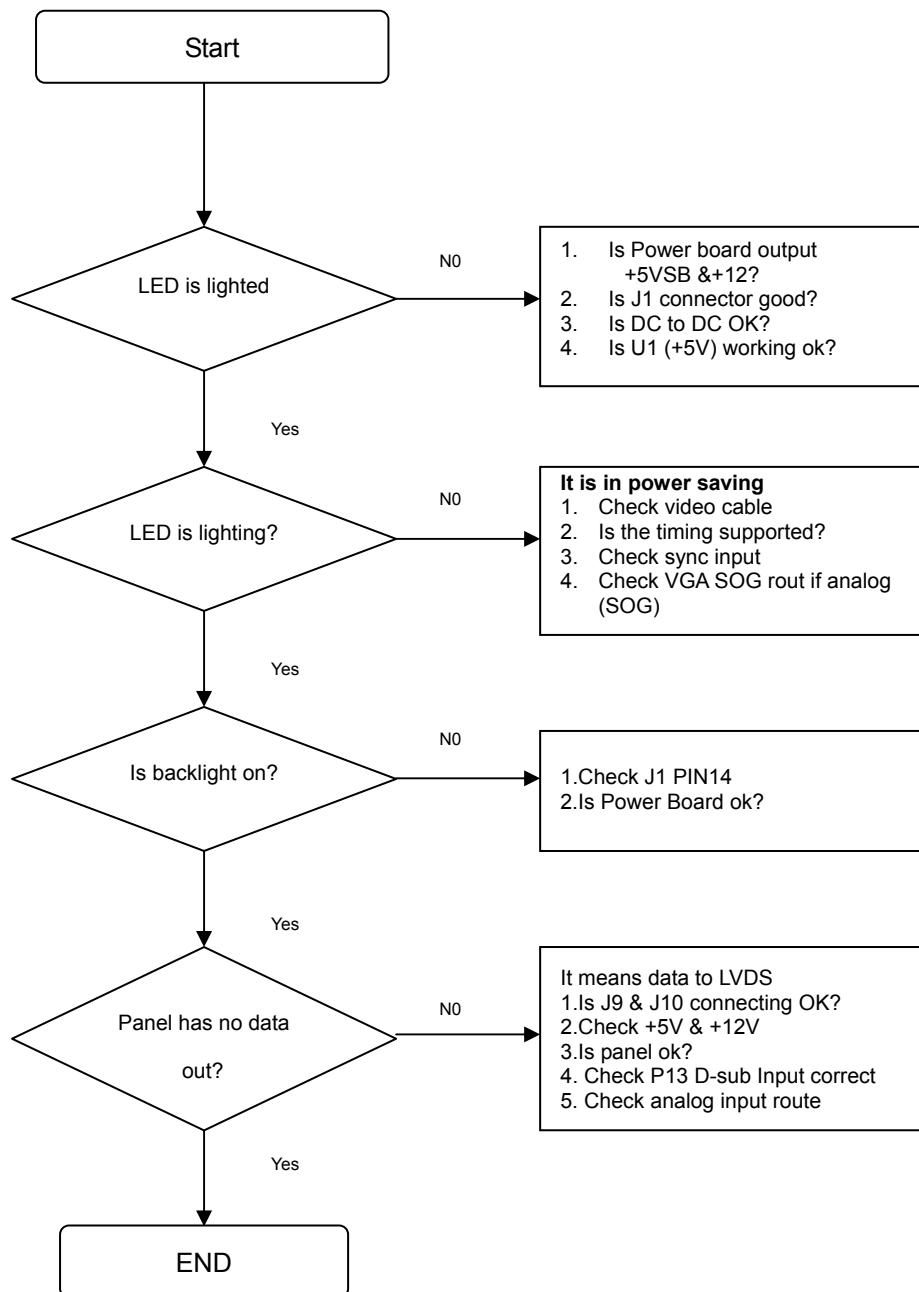
- a. Sort By
- b. Play Mode
- c. Repeat
- d. Audio Mode
- e. Info

Move Mode

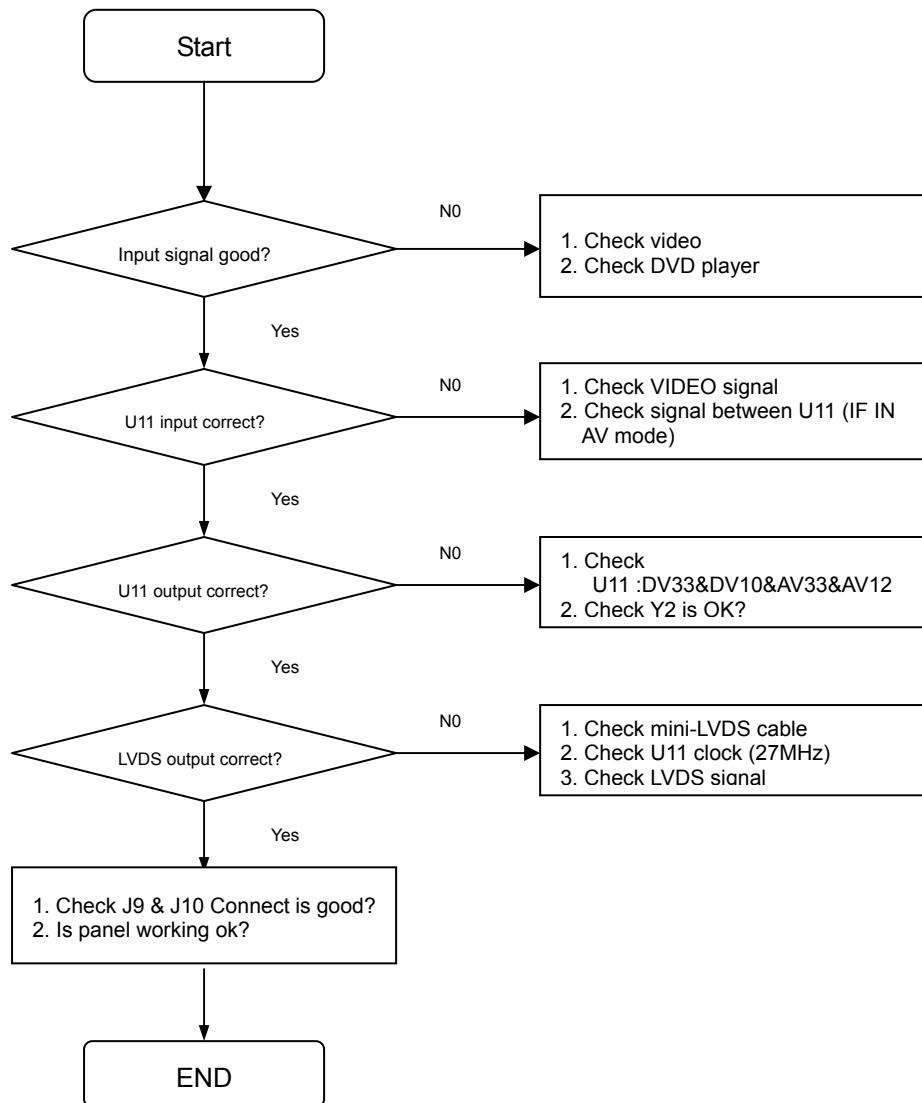
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- b. Play Mode
- c. Repeat
- d. Picture mode
- e. Wide
- f. Audio Mode
- g. Info

Chapter 9 Trouble shooting

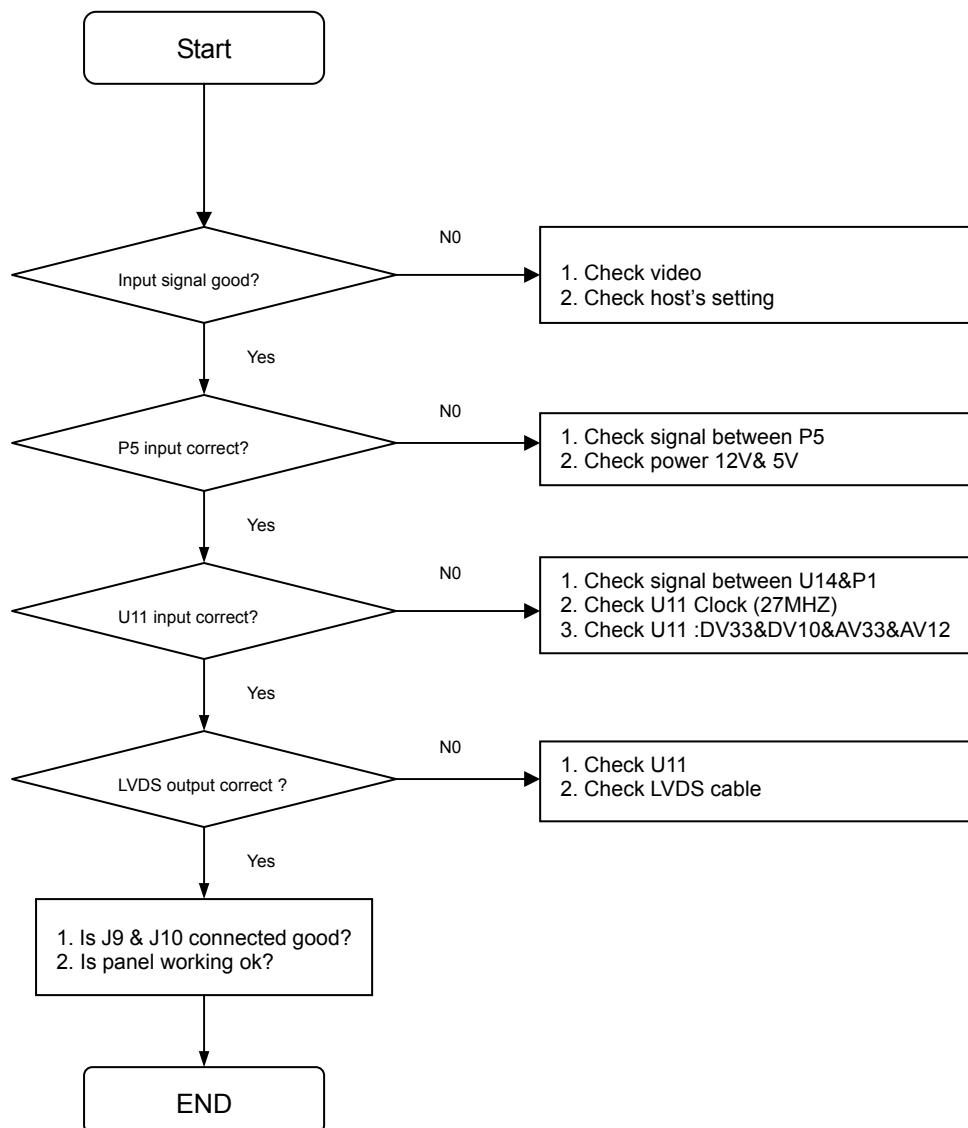
MONITOR DISPLAY NOTHING (PC MODE)

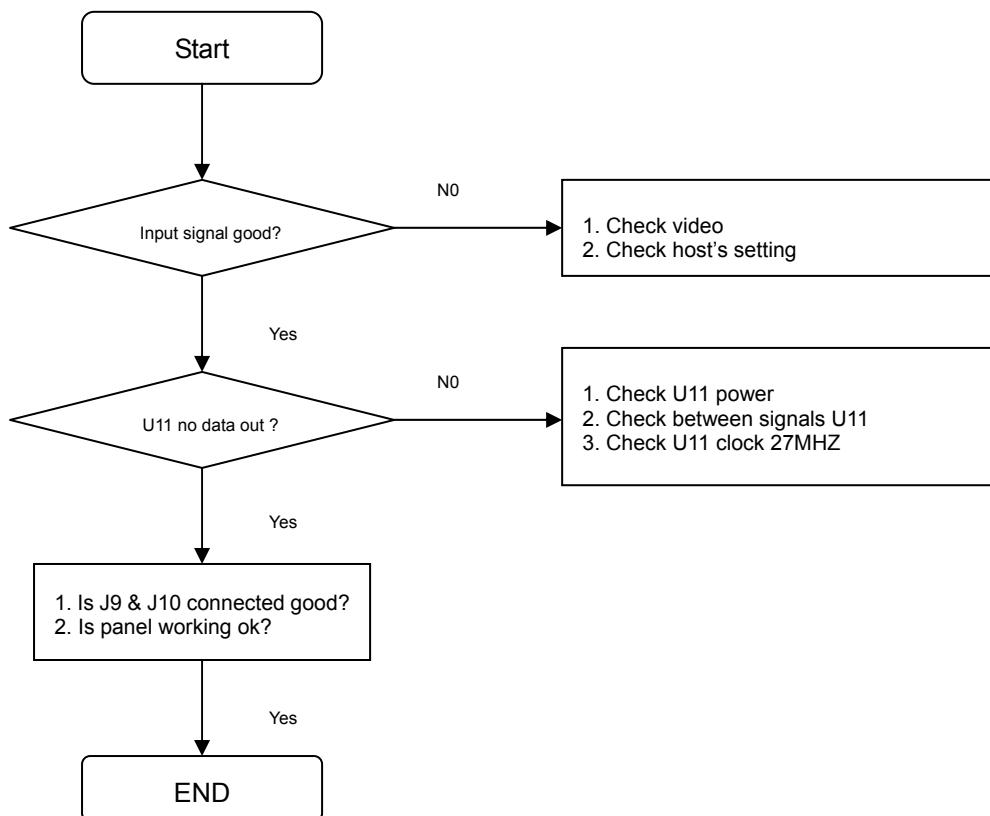


(TV, COMPOSITE ,VIDEO) IS NOT DISPLAY CORRECTLY

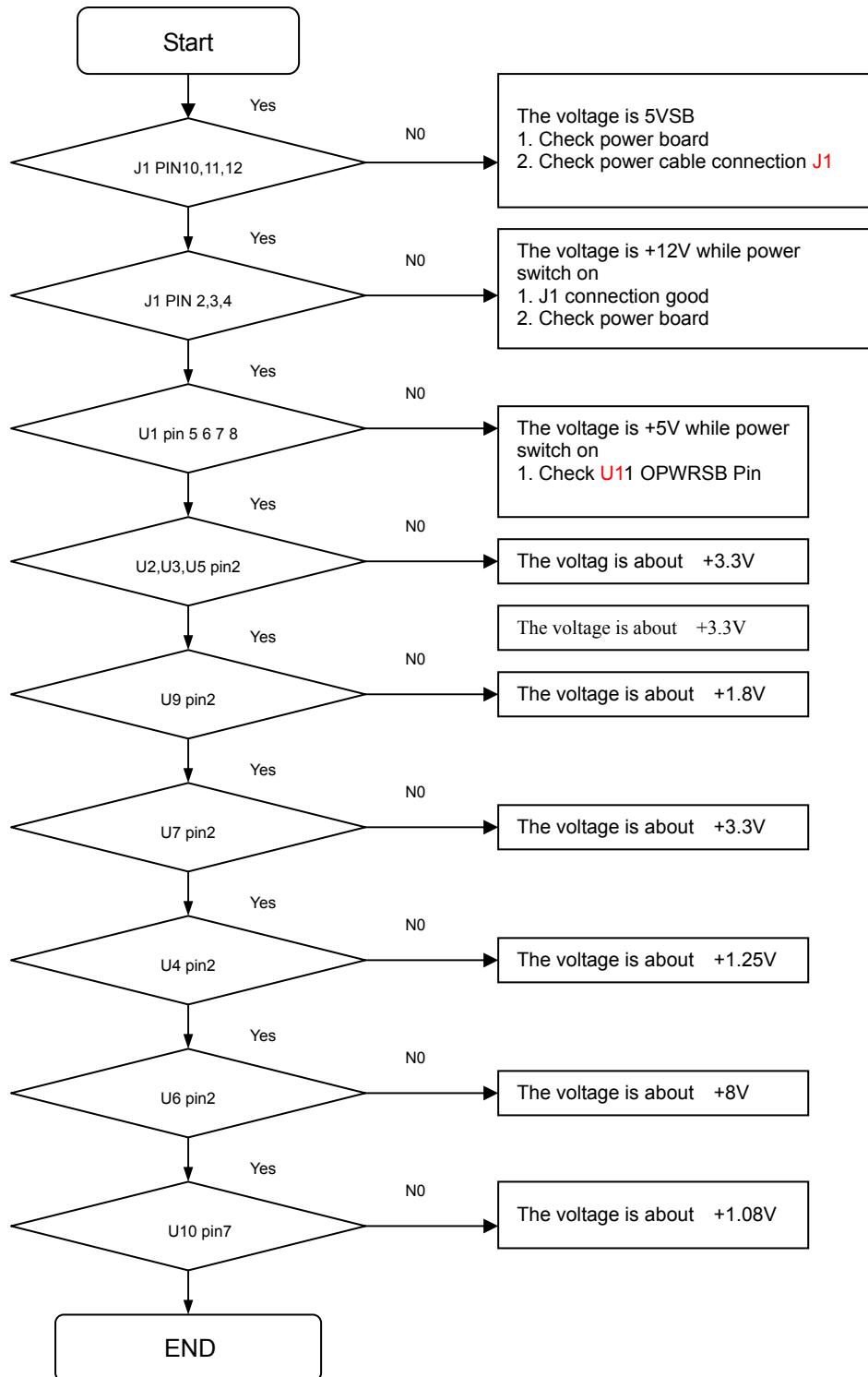


(COMPONENT) IS NOT DISPLAY CORRECTLY

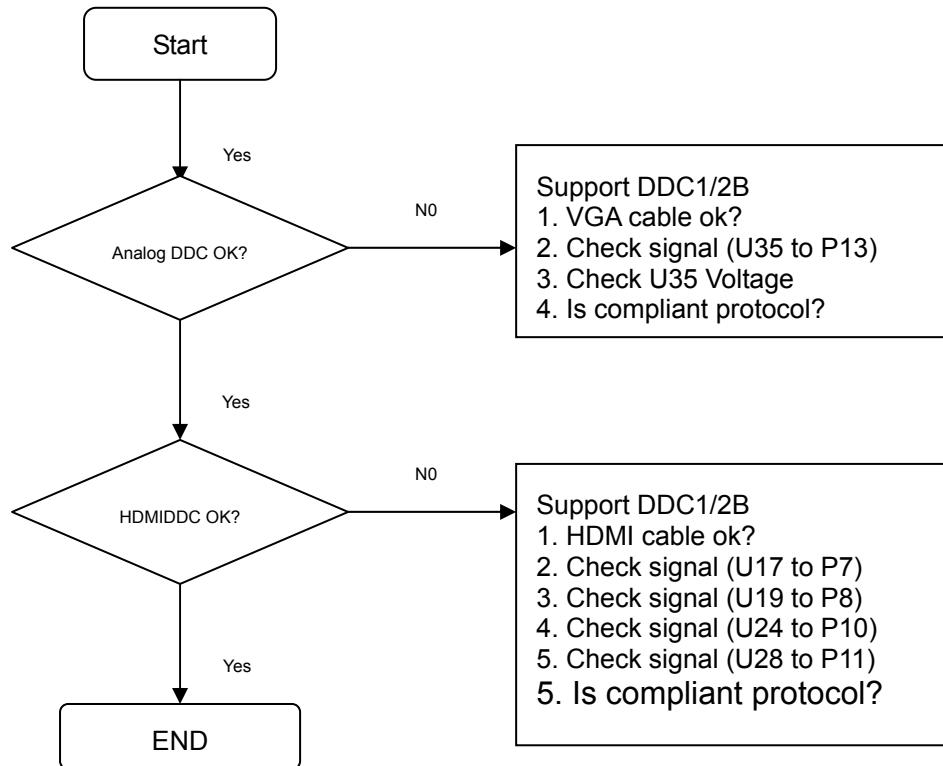




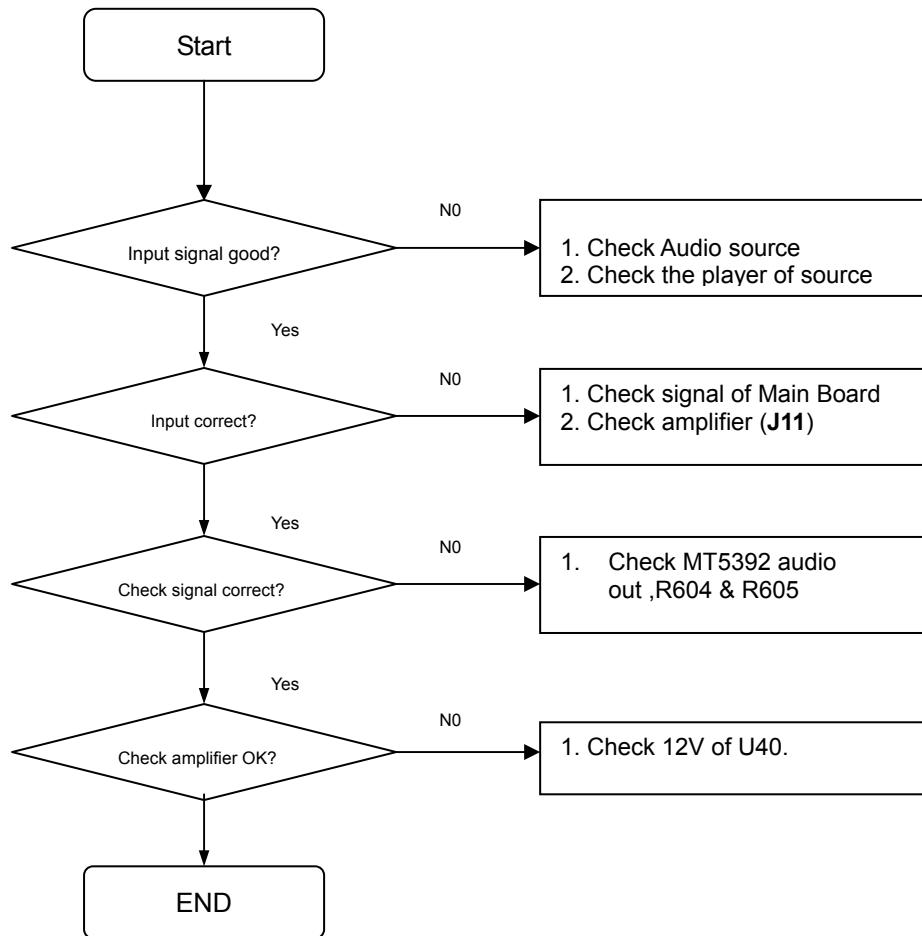
TROUBLE OF DC-DC CONVERTER



TROUBLE OF DDC READING



(TV_SIDE, AUDIO) IS NOT DISPLAY CORRECTLY

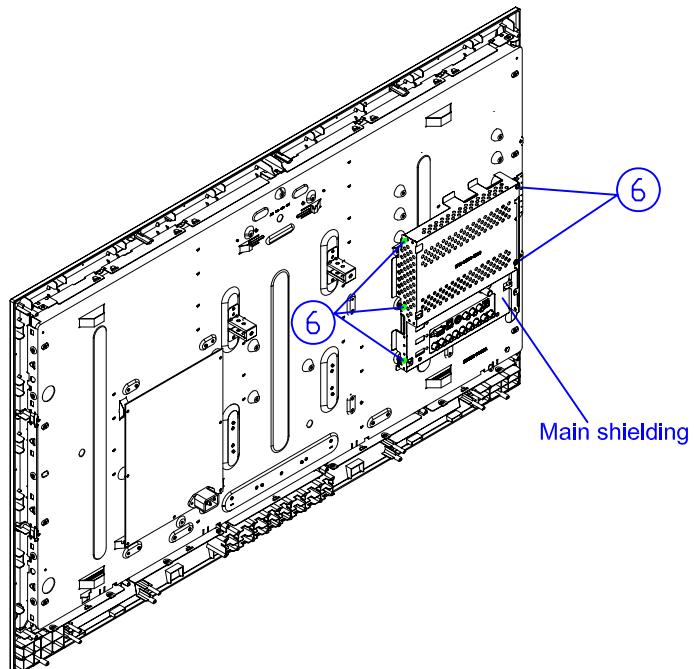
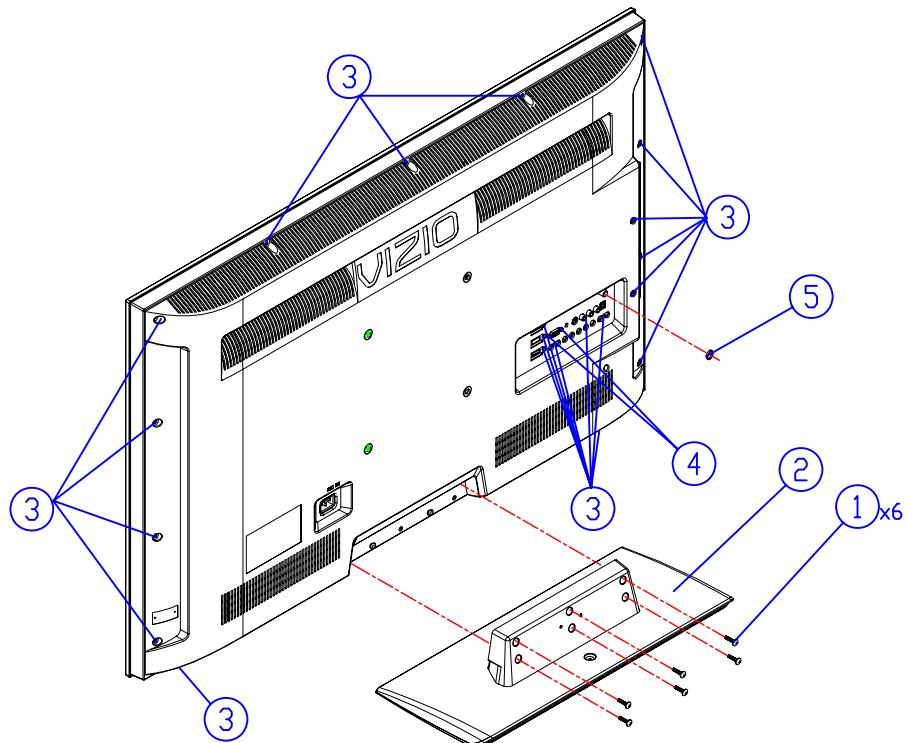


DISASSEMBLY INSTRUCTIONS

1. REAR COVER ASS'Y / CONNECTOR BD ASS'Y REMOVAL

Note: Spread a mat underneath to avoid damaging the TV surface.

- 1) Remove eight screws ① from Base Ass'Y .
- 2) Separate the Base Ass'Y ② .
- 3) Remove twenty-one screws ③ , two hexagon screws ④ and NUT screws ⑤ from rear cover.
- 4) Separate the rear cover.
- 5) Remove five screws ⑥ from main shielding.
- 6) Separate the Main shielding.



2. POWER BD ASS'Y REMOVAL

- 1) Remove the connector ⑦ (CN1) ⑧ (CN2) of the inverter cable.
- 2) Remove the connector ⑨ (CN3) ⑩ (CN4) of the Main cable.
- 3) Remove six ⑪ from Power BD ASS'Y .
- 4) Separate the Power BD ASS'Y .

3. MAIN BD ASS'Y REMOVAL

- 1) Remove the connector ⑫ (J6) of the speaker cable.
- 2) Remove the connector ⑬ (J1) of the Main cable.
- 3) Remove the connector ⑭ (J7) ⑮ (J5) of the FCC cable.
- 4) Remove the connector ⑯ (J3) of the IR cable.
- 5) Remove the connector ⑰ (J2) of the LED Backlight cable.
- 6) Remove six screws ⑯ .
- 7) Separate the MAIN BD and side shielding.

